CLAIMS:

1. A resonator structure (100, 100'), in particular a bulk-acoustic-wave (BAW) resonator, such as a film BAW resonator (FBAR) or a solidly-mounted BAW resonator (SBAR), comprising at least one substrate (10); at least one reflector layer (20; 20') applied or deposited on the substrate (10); at least one bottom electrode layer (30), in particular bottom electrode, applied or deposited on the reflector layer (20; 20'); at least one piezoelectric layer (40), in particular C-axis normal piezoelectric layer, applied or deposited on the bottom electrode layer (30); at least one top electrode layer (50; 50p, 50s), in particular top electrode, applied or deposited on the bottom electrode layer (30) and/or on the piezoelectric layer (40) such that the piezoelectric layer (40) is in between the bottom electrode layer (30) and the top electrode layer (50; 50p, 50s), characterized by at least one dielectric layer (63, 65) applied or deposited in and/or on at least one space in at least one region of non-overlap between the bottom electrode layer (30) and the top electrode layer (50; 50p, 50s).

2. A resonator structure according to claim 1, characterized in that the dielectric layer (63, 65) is deposited in such way that the total thickness of the region of non-overlap between the bottom electrode layer (30) and the top electrode layer (50; 50p, 50s) is equal to the total thickness of the region of overlap between the bottom electrode layer (30) and the top electrode layer (50; 50p, 50s) thus implying a planarisation of the resonator structure (100, 100') or that the thickness of the dielectric layer (63, 65) as deposited in the region of non-overlap between the bottom electrode layer (30) and the top electrode layer (50; 50p, 50s) is chosen other than that required for planarisation.

3. A resonator structure according to claim 1 or 2, characterized by at least

one massloading layer (70) applied on the top electrode layer (50; 50p, 50s) and/or on the dielectric layer (63, 65).

4. A resonator structure according to claim 3, characterized in that the mass loading layer (70) and/or the dielectric layer (65) and/or the top electrode layer (50; 50p, 50s) can be thickened (50p) in at least one region of at least one parallel resonator or shunt resonator and/or can be thinned (50s), opened and/or removed in at least one region of at least one series resonator.

5. A resonator structure according to at least one of claims 1 to 4, characterized in that the resonator structure (100, 100') comprises at least one rounded edge and/or that the top electrode layer (50; 50p, 50s) is smaller than the bottom electrode layer (30).

6. A resonator structure according to claim 1, characterized in having electrodes whose edges define the edge of the resonator, which are thin compared to the total thickness of the resonant cavity.

7. A resonator structure according to claim 6, characterized in having an electrode thickness d_e divided by thickness of resonant cavity d_{rc} according to $1\% \leq d_e/d_{rc} \leq 10\%$.,

8. A filter (200) comprising at least one resonator structure (100, 100') according to at least one of claims 1 to 7.

9. A filter according to claim 8, characterized by more than one closely-spaced resonator structure (100, 100') with widths of gaps between the resonator structures (100, 100') adjusted to give appropriate acoustic coupling and compatibility with mask design rules.

10. A method of producing a resonator structure (100, 100'), in particular a bulk-acoustic-wave (BAW) resonator, such as a film BAW resonator (FBAR) or a solidly-mounted BAW resonator (SBAR), comprising the following steps: (i) applying or depositing at least one reflector layer (20; 20') on at least one substrate (10); (ii) applying or depositing at least one bottom electrode layer (30), in particular bottom electrode, on the reflector layer (20; 20'); (iii) applying or depositing at least one piezoelectric layer (40), in particular C-axis normal piezoelectric layer, on the bottom electrode layer (30); (iv) applying or depositing at least one top electrode layer (50; 50p, 50s), in particular top electrode, on the bottom electrode layer (30) and/or on the piezoelectric layer (40) such that the piezoelectric layer (40) is in between the bottom electrode layer (30) and the top electrode layer (50; 50p, 50s), characterized by at least one additional step of (v) applying or depositing at least one dielectric layer (63, 65) in and/or on at least one space in at least one region of non-overlap between the bottom electrode layer (30) and the top electrode layer (50; 50p, 50s).

11. A method according to claim 10, characterized by at least one additional step of (vi) applying or depositing at least one mass loading layer (70) on the top electrode layer (50; 50p, 50s) and/or on the dielectric layer (63, 65), wherein it is possible to open and/or to remove the mass loading layer (70) and/or the dielectric layer (63, 65) in at least one region of at least one series resonator and/or to thicken the mass loading layer (70) and/or the dielectric layer (63, 65) in at least one region of at least one parallel resonator or shunt resonator.

12. Use of at least one resonator structure (100, 100') according to at least one of claims 1 to 6 and/or of at least one filter (200) according to claim 7 or 8 in receivers and/or in transmitters.